

IN THE CLAIMS:

Please correct the claim status identifier for claim 41, as follows. Also, the claim identifiers used in this response presume entry of the Preliminary Amendment filed on July 21, 2004. For the Examiner's convenience, all the claims currently pending in this application, including those not currently being amended, have been reproduced below.

1-19. (Cancelled)

20. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller controls said first supplier and said second supplier.

21. (Previously Presented) An apparatus according to Claim 20, wherein said first supplier comprises a first valve, said second supplier comprises a second valve and said controller controls said first valve and said second valve.

22. (Previously Presented) An apparatus according to Claim 20, wherein said controller controls a concentration of oxygen in the closed space.

23-25. (Cancelled)

26. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam into a wavelength region higher than an oxygen absorptivity when said second supplier supplies the oxygen.

27. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

a discharger, which discharges the gas from the closed space; and

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller changes the wavelength of the exposure beam to a shorter wavelength when said second supplier supplies the oxygen.

28. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

a discharger, which discharges the gas from the closed space;

a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element; and  
a laser control device which changes the emission laser wavelength region,  
wherein said controller controls said laser control device.

29. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;  
a first supplier, which supplies an inert gas into the closed space;  
a second supplier, which supplies a gas, containing oxygen, into the closed space;  
a discharger, which discharges the gas from the closed space; and  
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,  
wherein said controller oscillates the wavelength region continuously.

30. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;  
a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;  
a discharger, which discharges the gas from the closed space; and  
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,  
wherein said controller controls actuation of said light source.

31. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;  
a second supplier, which supplies a gas, containing oxygen, into the closed space;  
a discharger, which discharges the gas from the closed space; and  
a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element,

wherein said controller inserts a wavelength changing element into a path of the exposure beam.

32. (Previously Presented) An apparatus according to Claim 31, wherein said wavelength changing element is a harmonic wave producing element.

33-36. (Cancelled)

37. (Previously Presented) A device manufacturing method comprising the steps of:  
providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing oxygen, into the closed space,

(iv) a discharger, which discharges the gas from the closed space, and

(v) a controller for changing a wavelength of the exposure beam between an exposure process for the substrate and a cleaning process for the optical element;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

38. (Cancelled)

39. (Cancelled)

40. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

and

a controller, which controls concentration of oxygen in the closed space,

wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with substantially only the inert gas.

41. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing oxygen, into the closed space, and

(iv) a controller, which controls concentration of oxygen in the closed space;

exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

42. (Previously Presented) An exposure apparatus, comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space and the casing;  
and

a second supplier, which supplies a gas, containing oxygen, into the closed space.

43. (Previously Presented) An apparatus according to Claim 42, further comprising a discharger, which discharges the gas from the closed space.

44. (Previously Presented) An apparatus according to Claim 42, wherein, in a state in which the gas containing oxygen is introduced in the closed space by said second supplier, the beam is projected to thereby clean the optical element.



45. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 42;  
exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

46. (Previously Presented) An exposure apparatus, comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space; and

a second supplier, which supplies a gas, containing oxygen, into the closed space,

wherein, in a state in which the gas containing oxygen is introduced into the closed space by said second supplier, the beam is projected to thereby clean the optical element.

47. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 46;  
exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

48. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space;

a first supplier, which supplies an inert gas into the closed space;

a second supplier, which supplies a gas, containing oxygen, into the closed space;

and

a controller, which controls the first supplier and the second supplier,

wherein said controller functions so that, before exposure of the substrate, the inside of the closed space is filled with substantially only the inert gas.

49. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus comprising:

(i) an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being disposed in the closed space,

(ii) a first supplier, which supplies an inert gas into the closed space,

(iii) a second supplier, which supplies a gas, containing oxygen, into the closed space, and

(iv) a controller, which controls the first supplier and the second supplier;

exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

50. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being accommodated in said closed space;

a first supplier, which supplies an inert gas into said closed space and said casing;

and

a second supplier, which supplies a gas, containing oxygen, into said closed space.

51. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 50;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.

52. (Previously Presented) An exposure apparatus comprising:

an optical system, which directs an exposure beam emitted from a light source onto a substrate, said optical system including a casing and an optical element, said casing having a closed space and said optical element being accommodated in said closed space;

a first supplier, which supplies an inert gas into said closed space and said casing;  
and  
a second supplier, which supplies air into said closed space.

53. (Previously Presented) A device manufacturing method, comprising the steps of:  
providing an exposure apparatus as recited in Claim 52;  
exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

54. (Previously Presented) An exposure apparatus comprising:  
an optical system for directing an exposure beam from a light source onto a  
substrate, said optical system having an optical element, a casing that accommodates therein an  
optical surface of said optical element, and a closed space that surrounds said casing;  
a first supplier which supplies an inert gas into said closed space and said casing;  
and  
a second supplier which supplies an inert gas into said closed space.

55. (Previously Presented) A device manufacturing method, comprising the steps of:  
providing an exposure apparatus as recited in Claim 54;  
exposing a substrate by use of the exposure apparatus; and  
developing the exposed substrate.

56. (Previously Presented) An exposure apparatus comprising:

an optical system for directing an exposure beam from a light source onto a substrate, said optical system having an optical element, a casing that accommodates therein an optical surface of said optical element, and a closed space that surrounds said casing;

a first supplier which supplies an inert gas into said closed space and said casing;

and

a second supplier which supplies an inert gas into said casing.

57. (Previously Presented) A device manufacturing method, comprising the steps of:

providing an exposure apparatus as recited in Claim 56;

exposing a substrate by use of the exposure apparatus; and

developing the exposed substrate.